

21352

S/118/60/000/011/008/014
A161/A133

Multichannel control systems ...

proper number of channels in pneumatic systems, but the method suggested by Doctor of Technical Sciences Ya.Z.Tsyppkin might be used for determining the setting parameters in objects with positive selfaligning, or the Kotelnikov's theorem that makes possible the finding of the least time interval between the answerings of a point. The pneumo-electric system includes electro-pneumatic converters and either membrane type work mechanisms (Fig.4), or piston-type with self-braking. The latter variation is simpler. Conversion in it is possible with two pneumatic solenoid valves (Fig.5), which reduces the nonproductive losses of command air inherent in the membrane system (Fig.4). Instead of a feedback, correction may be achieved by variation of the control pulse duration in accordance with the mismatch signal X being produced by the measuring circuit. Such a system is used in the "МИР" ("MIR") device developed by ПКБ (PKB) and МЗТА (MZTA). A functional correlation of the control pulse duration and the x value in pneumo-electrical "MSAR" could be achieved by a circuit as in (Fig.6). The duration of regulating effect in this system is determined by the time interval between the operation of the relay 2P and 3P (i.e. delay of the relay 3P, T_3). The correcting effect, i.e. increased T_3 may be calculated from a formula

Card 2/9

21352

Multichannel control systems ...

S/118/60/000/011/008/014
A161/A133

determining the charging time of the capacitance to voltage equal to the thyatron ignition potential in the control electrode:

$$V_c = V_a \left(1 - e^{-\frac{t}{\tau}} \right)$$

where V_c is voltage in the capacitor, and V_a - the feed voltage.

Assuming $V_c = V_3$,

$$V_3 = V_a \left(1 - e^{-\frac{T_3}{\tau}} \right) \text{ and } T_3 = \tau \ln \frac{V_a}{V_a - V_3},$$

but $\tau = c(R + R_i) = c [R_i + f(x)]$, and,

$$\text{finally, } T_3 = c [R_i + f(x)] \ln \frac{V_a}{V_a - V_3}.$$

Evidently, the regulating effect time consists of two components - the one

Card 3/9

21352

Multichannel control systems ...

S/118/60/000/011/008/014
A161/A133

is determined by the variable resistance value R_1 , and the other by the value $f(x)$ (Fig.7). It must be kept in mind when selecting R_1 and $f(x)$ that T_3 must not exceed the time during which the commutator stays at each point. There are 7 figures and 6 Soviet-bloc references.

Card 4/9

LUK'YANOV, N. G.

Cand Med Sci - (diss) "Phtivazid-resistance of mycobacteria of tuberculosis and the role of amithiozone (tibione) in its pre-anticipation /preduprezhdeniye/ in combination chemotherapy of pulmonary tuberculosis." Odessa, 1961. 18 pp; (Odessa

State Med Inst imeni N. I. Pirogov); 300 copies; price not given; (KL, 6-61 sup, 239)

23561

S/118/61/000/005/002/006
D203/D306

9.4/60

16,8000(1031, 1121, 1132)

AUTHORS:

Kotovich, D.B., Luk'yanov, N.G. and Eygenbrot, V.M.,
Engineers

TITLE:

Control of technological parameters using electronic
ray indicators

PERIODICAL:

Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 5,
1961, 11-14

TEXT: Various methods of electronic ray indicators were studied by the
Proyektnokonstruktorskoye byuro ministerstva stroitel'stva (Planning
and Design Office of the Ministry of Construction), RSFSR, for the
control of technological parameters. A basic block diagram of a multi-
channel apparatus with the cathode ray tube is shown. The synchronizing
of the commutator and the horizontal deflection causes the switching on
of each of the controlled parameters only at a determined position of
the ray along the x-x axis. Most technological processes with small
changes of the parameters under production conditions should permit the

Card 1/6

23561

S/118/61/000/005/002/006
D203/D306

Control of technological...

use of zero-less scales. This allows an increase in the number of parameters which could be read on one CRT. The errors in reading could be reduced without an increase in the requirements with respect to the accuracy of the instrument. It was found that the number of parameters which could be read on one screen of 178 mm. diameter could be increased to 64 without inconvenience in the reading, provided that the variations of the parameters do not exceed 30% of the nominal value. The requirements with respect to the commutator are as follows: The time of the whole cycle should be less than 0.02 sec; the transmitted cycle should be stable; the commutator circuit should assure (together with the elements connected in series) a high input resistance approaching that at the no-load periods of the transmitter. Mechanical and hydro-mechanical commutators have many disadvantages e.g. the brushes, the presence of mercury and the fact that they cannot be applied in the case of a large number of channels. The working of mechanical commutators could be improved by the use of a long luminescence screen CRT which allows a 2-3 times lower velocity of the cycle. A contactless experimental photo-electric commutator is shown diagrammatically.

Card 2/6

23561

S/118/61/000/005/002/008
D203/D306

Control of technological...

Each photocell represents a variable resistance of the divider which has as second part the load resistance R_A . Because of the large value of the ratio $\frac{R_T}{R_\phi}$ at a convenient selection of R_A (such that

$$\frac{R_T}{R_\phi}$$

$R_\phi^0 \ll R_A \ll R_\phi^T$) it is possible to assume that when all

photocells darken, the potential across the R_A shall be near to zero, but at the lighting of one of them, the potential across the R_A will be equal to (eq. 1)

$$V_A = E_i \frac{R_A}{R_A + R_\phi^0}$$

where R_ϕ^0 = resistance of the illuminated photocell. R_ϕ^T = resistance of the darkened photocell. E_i = signal voltage of the contacting unit.

This photo-electric commutator appears to be promising. Its disadvantage is the limited work time of the illuminator. This could be corrected by lowering the input voltage applied to the illuminator. Experiments show that lowering the glow voltage by 15% does not affect practically

Card 3/6

23561

S/118/61/000/005/002/006
D203/D306

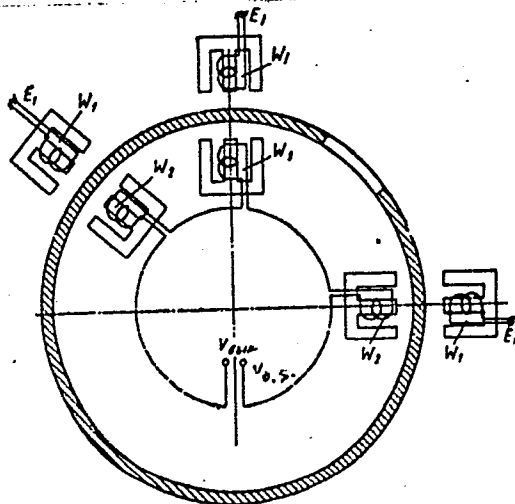
Control of technological...

the magnitude of the V_A . An inductive commutator which is described is shown diagrammatically in Fig. 4.

Fig. 4. Main diagram of inductive commutator. E_i - controlled voltage; $V_{o.s.}$ - output signal; W_1 - primary windings, W_2 - secondary windings.

The primary and secondary windings of the transformers are wound on separate cores. These are separated by a rotating magnetic screen. At the moment the air gap passes through a particular pair of cores, the linkage of this pair sharply increases and from the series-connected secondary windings the voltage is

Card 4/6



23561

S/118/61/000/005/002/006
D203/D306

Control of technological...

passed to the amplifier of the vertical deflection which is proportional to the signal. The disadvantages are: a) The only possible application is with a.c. at a frequency of several kilocycles per/s.; b) The distorted shape of the signal leads to the need for smoothing; c) The signals are basically non-linear. The contactless electronic high speed commutators, based on electronized and magnetic elements, consist of keys controlled by the switching system. They are suitable for a great number of measured channels which could be transmitted to several CRTs. Two methods are suggested. One is the use of a linear evolvent, synchronized with the work of the commutator --e.g. an evolvent with a waiting time which is started at the switching-on of the first channel; or a non-stop waiting evolvent and the introduction of an additional channel, with a constant signal which actuates the evolvent. The second method is the discrete shifting of the ray along the x-x axis with 'ladder' generators, which are contacted to the plate of a fixed potential. This assures the shifting of the ray into the position corresponding to the measuring on the given channel. In the

Card 5/ 6

23561

Control of technological...

S/118/61/000/005/002/006
D203/D306

experimental apparatus the system of reading several parameter values set by the operator was adapted. The preset values were taken as zeroes, and the scale was up to 20% of the maximum possible value. The contactless commutator working on code controlled the valves successively contacting to the measured channels. The same commutator simultaneously controlled the second group of valves which were switched on the horizontal deflections of the stabilizing potentials, determining the place of each channel along the x-x axis. Prolonged experiments have shown that the maximum errors for measuring the channels of pressure and output did not exceed $\pm 2.5\%$ and those for the temperatures did not deviate more than $\pm 1.5\%$. Further development of this system will depend on the improvement of the elements used. The development of mono- and multi-ray tubes with electrostatic control having a flat rectangular screen of the size of cinescopes 43 -Л K -2Б (43-LK-2B) and 53-Л K- 2Б (53-LK-2B) will play an important part. In addition to the authors, the following Engineers participated in the research described above: V.M. Kuchenkov, L.M. Mayzel', I.O. Oskolkov, N.A. Trofimov. There are 5 figures and 6 Soviet-bloc references.

Card 6/6

DAVIDENKO, Pavel Aleksandrovich; LUK'YANOV, N.G., red.; SEDOVA, Z.D.,
red. izd-va; BACHURINA, A.M., tekhn. red.

[Electrical section of a wood drying automatic control system]
Elektronnaiia skhema avtomaticheskogo kontroliia sushki drevesiny.
Moskva, Goslesbumizdat, 1962. 53 p. (MIRA 16:2)
(Wood—Drying) (Automatic control)

S/118/62/000/002/004/005
D221/D301

AUTHORS: Lemberg, M.D., Luk'yanov, N.G., Mayzel', L.M., and
Eygenbrot, V.M., Engineers

TITLE: New circuits and means of pneumatic control

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 2,
1962, 31 - 34

TEXT: The authors describe the results obtained at the Institut avtomatiki i telemekhaniki (Institute of Automation and Telemechanics), Proyektno-konstruktorskoye byuro Ministerstva stroitel'stva RSFSR (Project and Design Office of Ministry of Construction RSFSR) the factory 'Tizpribor' and other organizations. The above permit also the realization of pneumatic control for positioning from a central control point. Qualitative efficiency of pneumatic circuits depends on correctly assessing the properties of air channels, which predetermine the quickness of response of the system. The results of experimental determination of the time characteristics of different length pneumatic pipes (made of copper) are described.

Card 1/3

New circuits and means of pneumatic ... S/118/62/000/002/004/005
D221/D301

The analysis indicates that the quickness of response may be improved by reducing the pressure of actuation and keeping constant the excitation pressure at the pipe inlet. The evaluation of control signals with various parameters from the point of view of freedom from interference demonstrates the expediency of pressure signals with pulse characteristics: $P = 0$ and $P > C$, where C is a certain pressure when the pneumatic element is operating. By the assumption $C = 0.2$ to 0.3 kg/cm^2 , the response time of pneumatic elements at a distance of up to 300 m is 6 - 8 sec. The use of these two pulse marks permits coding of control signals. This demonstrates the advantage of parallel feed of signals which reduces the transmission time and exhibits a high immunity from interference. Its operational principle is based on a two-step selection of objects by a decade system. The control object is chosen by manual control valves which are joined into a set of tens and units. The consecutive operations are illustrated by an example of a piston actuator. The arrangement includes a block of indicators forming a panel. The manometers are designed for visual observation of control operation and the position of the actuator. In the case of fire and safety

Card 2/3

New circuits and means of pneumatic ... 8/118/62/000/002/004/005
D221/D301

requirements it is possible to apply combined pneumatic and electric circuits of signalization. For this purpose the relays of pressure convert the pneumatic control signals into electrical pulses, and use diaphragm relays. Limit switches may also be used as keys for selecting the units and decades. A further improvement is attained by applying a 100 actuator system. The shorter response time is achieved by air feed from the main supply near the selector bloc and with the incorporation of booster relays for the opening, closing and position control of the actuator. The circuit was tested and the results are indicated in a table. The above confirmed the correspondence of the circuit characteristics which are stipulated for high speed operation. The advantages of the considered arrangement is the reduction of panel sizes by using general control members. The number of connections is down from 200 to 25. There are 5 figures and 1 table.

Card 3/3

LUK'YANOV, N.G., starshiy elektromekhanik

Maintenance-free operation of code transmitters can be prolonged.
Avtom., telem.i sviaz' 6 no.5:40 My '62. (MIRA 15:4)

1. Novokuznetskaya distantziya signalizatsii i svyazi Zapadno-Sibirskoy dorogi.
(Railroads--Electronic equipment)

ACCESSION NR: AT4042446

S/0000/64/000/000/0132/0136

AUTHOR: Luk'yanov, N. G.; Miller, Yu. Ya.; Eygenbrot, V. M.

TITLE: The development and test results of pneumatic telemetry systems

SOURCE: Vsesoyuznoye soveshchaniye po pnevmo-gidravlicheskoy avtomatike. 5th, Leningrad, 1962. Pnevmo- i gidroavtomatika (Pneumatic and hydraulic control); materialy* soveshchaniya. Moscow, Izd-vo Nauka, 1964, 132-136

TOPIC TAGS: automation, control system, feedback, telemetry, pneumatic control system, pneumatic telemetry system, pneumomechanical transducer

ABSTRACT: The telemetry systems considered in this paper are intended to transmit information from distant objects to a central dispatching point. Detailed descriptions are given of a nozzle-damper coding device, a relief-probing coding device and a pneumomechanical transducer. The purpose of the tests, which were carried out at the Novoufimskiy neftepererabatyvayushchiy zavod (Novoufimsk Petroleum Refinery), was to determine the operational capacity of the pneumatic measurement systems, the errors in the transmission of the meter readings, and the amount of time taken by the signal to pass from the instant the call is made to the appearance of the reading on the secondary instrument. From the results of the tests it is concluded that the use of pneumatic telemetry systems has practical importance.

Card 1/2

ACCESSION NR: AT4042446

tance. Such systems are distinguished by their highly accurate transmission of the meter readings, by being completely fire- and explosion-proof, and by their reliability and immunity to noise. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 29Jan64

ENCL: 00

SUB CODE: IE

NO REF SOV: 001

OTHER: 000

Card 2/2

LEMBERG, M.D., inzh.; LUK'YANOV, N.G., inzh.; MAYZEL', L.M., inzh.; EYGENBRDT,
V.M. inzh.

New systems and means of pneumatic control. Mekh.i avtom.proizv.
16 no.2:31-34 F '62. (MIRA 17:3)

LUK'YANOV, Nikolay Georgiyevich; EYGENBROT, Viktor Moiseyevich;
~~SOLOANIK~~, G.Ye., ved. red.; VORONOVA, V.V., tekhn. red.

[Pneumatic remote control] Pnevmaticheskaya telemekhanika.
Moskva, Gostoptekhnizdat, 1963. 76 p. (MIRA 17:3)

LUK'YANOV, N.G., inzh

Investigating the carrying capacity of rod bolting in the Starobin potassium salt deposit. Izv. vys. ucheb. zav.; gor. zhur.
7 no.3:36-40 '64 (MIRA 17:8)

1. Permskiy politekhnicheskiy institut. Rekomendovana kafedroy razrabotki mestorozhdeniy poleznykh iskopayemykh.

LUK'YANOV, N.G., gornyy inzh.

Rod bolting in the Soligorsk potassium mine. Gor. zhur.
no.12:58-59 D '62. (MIRA 15:11)

1. Gornaya laboratoriya Vsesoyuznogo nauchno-issledovatel'skogo
instituta galurgii, g. Soligorsk.
(Soligorsk region—Mine roof bolting)

LUK'YANOV, N.I.

Production of dietetic feed additives. Veterinariia 41
no.11:63-65 N '64. (MIRA 18:11)

1. Nachal'nik veterinarnogo otdela Volynskoy oblasti.

ATAULIN, V.V.; VLASOVA, R.M.; DAVYDOVA, Ye.A.; DANILENKO, I.S.; DZIOV, V.A.;
 DUBROVIN, A.P.; YEFANOVA, L.V.; KARPENKO, L.V.; KLEPIKOV, L.N.;
 KOTRELEV, S.V.; LUK'YANOV, H.I.; MEL'NIKOV, N.V., prof., obshchiy
 red.; MKRTYCHAN, A.A.; NEMTINOV, A.M.; POGOSYANTS, V.K.; SEMIZ,
 M.D.; SKOBLO, G.I.; SLOBODCHIKOV, P.I.; SMIRNOV, V.M.; SUSHCHENKO,
 A.A.; SOKOLOVSKIY, M.M.; TRET'YAKOV, K.M.; FISH, Ye.A.; TSOY, A.G.;
 TSYPKIN, V.S.; CHEKHOVSKOY, P.A.; CHIZHIKOV, V.I.; ZHUKOV, V.V.,
 red.izd-va; KOROVENKOVA, Z.L., tekhn.red.; PROZOROVSKAYA, V.L.,
 tekhn.red.

[Prospects for the open-pit mining of coal in the U.S.S.R.; studies
 and analysis of mining and geological conditions and technical and
 economic indices for open-pit mining of coal deposits] Perspektivy
 otkrytoi dobychi uгля v SSSR; issledovanie i analiz gornogeologi-
 cheskikh uslovii i tekhniko-ekonomicheskikh pokazatelei otkrytoi
 razrabotki ugol'nykh mestorozhdenii. Pod obshchei red. N.V.Mel'-
 nikova. Moskva, Ugletekhizdat, 1958. 553 p. (MIRA 11:12)

1. Vsesoyuznyy tsentral'nyy gosudarstvennyy proyektnyy institut
 "Tsentrogiroshakht." 2. Chlen-korrespondent AN SSSR (for Mel'-
 nikov).

(Coal mines and mining)

LUK'YANOV, Nikolay Ivanovich; CHERVYAKOVA, L.S., red.

[Production organization in public eating establishments] Organizatsiia proizvodstva predpriatii obshchestvennogo pitaniia. Izd.3., perer. i dop. Moskva, Gostorg-izdat, 1961. 230 p. (MIRA 18:4)

LUK'YANOV, N.K.

ZASHCHEPIN, A.N., kandidat tekhnicheskikh nauk; ZEL'MANOVICH, M.S.,
kandidat tekhnicheskikh nauk; LUK'YANOV, N.K., inzhener.

[Over-all mechanization of concrete road construction] Kompleksnaia
mekhanizatsiia stroitel'stva tsementobetonnykh pokrytii. Moskva,
Izd-vo dorozhno-tekhn.lit-ry, 1953. 91 p. (MLRA 7:2)
(Roads, Concrete)

LUK'YANOV, N.K., inzhener.

Mechanized charging of filling materials at a concrete plant. Bnl.
stroit.tekh. 10 no.17:11-12 D '53. (MLHA 7:1)

(Concrete)

LUK'YANOV, N.K., inzhener.

Building pavements using precast reinforced concrete slabs. Avt.der.19
no.8:16 Ag '56. (Pavements, Concrete) (MIRA 9:10)

LUKYANOV, N.M.; KHAZANOV, M.I., nauchnyy redaktor

[Epidemiology] Epidemiologiya. Nauch. redaktor M.I. Khazanov.
Moskva, 1956. 22 plates (MLRA 9:7)
(EPIDEMIOLOGY)

LUK'YANOV, N. N.

26584 Opyt peredovikov (Zhivotnovodov) yaoslavskoy oblasti. Sots. Zhivotnovodstvo, 1949, No, 4, s. 11-14.

SO: LETOPIS' NO. 35, 1949

MIKHAYLOV, P.V.; LUK'YANOV, M.P.

Use of polyacrylonitrile in sizing. Tekst. prom. 24 no.5:
26-29 My '64 (MIRA 18:2)

1. Nachal'nik nauchno-tekhnicheskogo otdela Vsesoyuznogo
nauchno-issledovatel'skogo instituta sinteticheskikh volokon
(for Mikhaylov). 2. Nachal'nik otdela ispytaniy tekstil'nykh
materialov Kalininskogo nauchno-issledovatel'skogo instituta
tekstil'noy promyshlennosti (for Luk'yanov).

LUKYANOV, N.P.

PANKRAT'YEV, Grigoriy Vasil'yevich, kand.sel'skokhoz.nauk; REDIKH, Vladimir Karlovich, kand.sel'skokhoz.nauk; LARIONOV, V., doktor biolog.nauk, red.; MESHCHANKINA, A.B., red.; LUK'YANOV, N.P., red.; SAYTANIDI, L.D., tekhn.red.

[Poultry raising on state farms] Sovkhoznoe ptitsevodstvo. Pod red. V. Larionova. Moskva, Izd-vo M-va sel'. khoz. RSFSR, 1958. 220 p.

(MIRA 12:1)

(Poultry)

LUK'YANOV, N.P., inzh.

Allowances for fastening fittings before insulation and requirements for accuracy in building the structural members of hulls. Trudy NTO sud.prom. 8 no.3:45-48 '59.

(MIRA 13:5)

(Hulls (Naval architecture)) (Shipfitting)

ZHUK, I.Ya.; LUK'YANOV, N.P.

Semiautomatic means of constructing seismic time sections. Razved.i
prom.geofiz. no.45:51-60 '62. (MIRA 15:11)
(Seismology--Electric equipment)

MIKHAYLOV, P.V.; VARESHIN, I.A.; LUK'YANOV, N.P.

Use of polyacrylamide for yarn sizing. Tekst. prom. 23 no.7:
45-47 J1 '63. (MIRA 16:8)

1. Nachal'nik nauchno-tekhnicheskogo otdela Vsesoyuznogo nauchno-issledovatel'skogo instituta sinteticheskogo volokna (VNIISV), g. Kalinin (for Mikhaylov).
2. Nachal'nik tkatskogo proizvodstva fabriki imeni Vagzhanova (for Vareshein).
3. Glavnyy inzh. Kalininskoy tkatskoy fabriki (for Luk'yanov)
(Sizing (Textile)) (Acrylamide)

SYTOV, B.K.; DMITRIYEV, B.S.; LUK'YANOV, N.P.

Plastics in shipbuilding. Inform. biul. VINKH no.12:14-16 D '64
(MIRA 18:2)

L 8498-66 (A)		EWT(m)/EWP(j)/EWP(t)/EWP(b)		JD/RM
ACC NR: AP5028478		SOURCE CODE: UR/0286/65/000/020/0064/0064		
AUTHORS: Ardy, D. I.; ^{44.55} Kamenetskiy, I. Ya.; ^{44.55} Smirnova, A. V.; ^{44.55} Sergeyeva, A. A.; ⁷⁵ Ponomareva, V. M.; ^{44.55} Golubeva, A. V.; ^{44.55} Luk'yanov, N. P.; ^{44.55} Ieremina, Ye. M.; ^{44.55} Sivograkova, K. A.; ^{44.55} Kinter, I. P.; ^{44.55} Shalina, V. P.				
ORG: none				
TITLE: Surfacing for metallic and reinforced concrete decks. Class 39, No. 175643 /announced by Organization of the State Committee on Ship Construction SSSR (Organizatsiya gosudarstvennogo komiteta po sudostroyeniye SSSR)/				
SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 64				
TOPIC TAGS: polymer, copolymer, rubber, mineral filler, pigment, metal surfacing, reinforced concrete, ship component, SYNTHETIC RUBBER				
ABSTRACT: This Author Certificate presents a surfacing material for metallic and reinforced concrete decks. The surfacing material is based on a binding polymer and on mineral fillers and pigments. To increase its resistance to abrasion and corrosion and to reduce its slipperiness, a copolymer of styrole with nitrylacrylic acid and with butylacrylic rubber is used as the binding polymer.				
SUB CODE: 11/ SUBM DATE: 12Mar64				
NVK Cord 1/1		UDC: 678.746.2--139.678.046.3 678.047		

LUK'YANOV, N.V.

Organizing the work of the overall major repair of apartment
houses. Nov. tekhn. zhil.-kom. khoz.: Zhil. khoz. no. 2:4-12 '63.
(MIRA 18:6)

LUK'YANOV, N.V.; CHIRKOV, M.A.

Reconstruction of apartment houses. Nov. tekhn. zhil.-kom. khoz.:
Zhil. khoz. no.2:17-22 '63. (MIRA 18:6)

ZAL'TSMAN, Isaak Moiseyevich, inzh.; LUK'YANOV, Nikolay Vasil'yevich;
KOMAROVSKIY, M.F., inzh., red.; SHILLING, V.A., red. izd-va;
BELOGUROVA, I.A., tekhn. red.

[Manufacturing and installing stamped steel radiators] Opyt izgotovleniia i montazha stal'nykh shtampovannykh nagrevatel'nykh priborov. Leningrad, 1961. 21 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Stroitel'naia promyshlennost', no.7) (MIRA 14:7)

(Radiators)

BOLDYREVA, Klavdiya Vasil'yevna, svinarka. Prinimal uchastiye LUK'YANOV,
N.V., zootekhnik. TRET'YAKOV, G.P., red.; SEMENCHUK, S.I.,
red.; YASHEN'KINA, Ye.A., tekhn.red.

[Lowering the cost of pork production] Snizhaem zatraty na pro-
izvodstvo svininy. Kuibyshev, Kuibyshevskoe knizhnoe izd-vo.
1960. 11 p. (MIRA 14:1)

1. Sovkhoz "Pioner" (for Boldyreva).
(Swine)

LUK'YANOV, Nikolay Vasil'yevich; KAZANSKIY, N.V., red.; DOLGOVA,
K.N., red. izd-va; LELYUKHIN, A.A., tekhn. red.

[Mechanization of the principal repair and building operations]
Mekhanizatsiia osnovnykh remontno-stroitel'nykh rabot.
Moskva, Izd-vo M-va kommun. khoz. RSFSR, 1962. 141 p.

(MIRA 16:1)

(Apartment houses--Maintenance and repair)

LUK'YANOV, N.

42402: LUK'YANOV, N. YAST REBOV, N. Forsunochnoraspylitel'naya syshil'naya ustanouka.
(Proizvodstvo sukhogo moloka) moloch prom-st' 1948, No. 11, s 22-28.

SO: Letopis' Zhurnal'nykh Statey, Vol. 47, 1948.

12

CA

Vacuum apparatus for evaporation of milk. N. Luk'-
Yangy. *Molokhnaya Prom.* 11, No. 4, 11-15(1959).
Vacuum evaporator with steam injector feed is described
with diagrams and explanation of principles of operation.
G. M. Kosolomoff

CA

Vacuum milk evaporator. N. Luk'yanov. *Moloch-
naya Prom.* 11, No. 6, 9-14(1957); cf. *C.A.* 44, 6982a.
—Construction details and operation of a vacuum evap-
orator are described, with particular attention to the
constructional detail of the condenser system, steam ejec-
tors, and heaters. G. M. Kosolapoff

12

CA

Use of M-4 and M-4a schemes. N. L. Kozlov. *Moskva Prom.* 12, No. 8, 18-19(1957). Polemic (cf. preceding abstr.). It is pointed out that a higher temp. in sepn. and lowered throughput of the separator suffice to raise the yields which are criticized in the preceding abstr.
G. M. Kosolapoff

LUK'YANOV, N.

Cream-Separators

Increasing the speed of revolution of a separator cylinder, Mol. prom.
13, No. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, May 1952.
Unclassified.

LUK'YANOV, N.

Dairying - Apparatus and Supplies

Increasing the efficiency of pasteurizers, Mol. prom. 13, No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, May 1952.
Unclassified.

LUK'YANOV, N.

Cream Separators

Separation of milk without heating. Mol. prom. 13 No. 8, 1952

Monthly List of Russian Accessions, Library of Congress, November, 1952 UNCL.

1. LUK'YANOV, N.

2. USSR (600)

4. Dairying

7. Answer to Comrades Lipatov and Klimenko. Moloch.prom., 14, no. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

LUK'IANOV, N.

Creameries

Butter production of V.A. Meleshin's method. Moloch. prom. 14, no. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

1. LUK'YANOV, N.
2. USSR (600)
4. Cream Separators
7. Device for determining the center of gravity of a separator drum, Moloch.prom.
14 no. 5, 1953.
9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

LUK'YANOV, N.G.

Role of tibione in combined drug therapy in pulmonary tuberculosis. Zdravookhranenie 3 no.1:15-20 Ja-F '60. (MIRA 13:6)

1. Iz kafedry fakul'tetskoy terapii (zav. - prof. N.T. Starostenko) Kishinevskogo meditsinskogo instituta.
(ACETANILIDE) (TUBERCULOSIS)

LUK'YANOV, N.G.

Experimental tuberculosis in guinea pigs caused by mycobacteria
resistant to phthivazid. Zdravookhranenie 3 no.1:41-45 Ja-F
'60. (MIRA 13:6)

1. Iz kafedry fakul'tetskoy terapii (zav. - prof. N.T. Staro-
stenko) Kishinevskogo meditsinskogo instituta.
(TUBERCULOSIS) (ISONICOTINIC ACID)

LUK'YANOV, N.Ya.

KIVENKO, S.F.; LUK'YANOV, N.Ya.; PAKHIRKO, A.A.; BEZDENEZHNYKH, V.,
retsenzent; BORISOV, S., retsenzent; KOSTYGOV, V.V., redaktor;
AKIMOVA, A.D., redaktor; GOTLIB, E.M., tekhnicheskii redaktor.

[Production of condensed and powdered milk in butter plants] Proiz-
vodstvo zgushchennogo i sukhogo moloka na maslodel'nykh zavodakh.
Pod red. V.V.Kostygova. Moskva, Pishchepromizdat, 1954. 153 p.
(Milk, Condensed)(Milk, Dried) (MLRA 8:3)

Luk'yanov, N. Ya.

KDK, Gustav Antonevich, professor, doktor tekhnicheskikh nauk; LUK'YANOV,
N.Ya., professor, doktor tekhnicheskikh nauk; SURKOV, V.D., professor,
doktor tekhnicheskikh nauk; IVANOVA, N.M., redaktor; CHEBYSHEVA, Ya.A.,
tekhnicheskiiy redaktor.

[Processes and equipment in the dairy industry] *Protsessy i apparaty*
melechnoi promyshlennosti. Moskva, Pishchepremizdat. Vol.1. 1955.47lp.
(Dairying) (MLRA 9:4)

LUK'YANOV, N.Ya.; BARANOVSKIY, N.V.

[Dairy plant equipment] Oborudovanie predpriatii molochnoi
promyshlennosti. Moskva, Pishchepromizdat, 1958. 465 p.
(MIRA 12:12)

(Dairy plants--Equipment and supplies)

LIPATOV, Nikolay Nikitovich, kand. tekhn. nauk; KUK, G.A., prof.,
retsenzent; LUK'YANOV, N.Ya., kand. tekhn. nauk, retsenzent;
IVANOVA, N.M., red.; SOKOLOVA, I.A., tekhn. red.

[Separation of milk] Separirovanie moloka. Moskva, Pishche-
promizdat, 1960. 254 p. (MIRA 15:1)
(Milk)

LUK'YANOV, Nikolay Yakovlevich; BOGATAYA, L.M., red.; SATAROVA, A.M.,
tekh.n.red.

[Production lines in butter making; control and operation]
Potochnye linii v masloделии; regulirovanie i ekspluatatsiia.
Moskva, Pishchepromizdat, 1961. 91 p. (MIRA 15:5)
(Assembly-line methods)
(Creameries--Equipment and supplies)

KRUPIN, G.V., prof.; LUK'YANOV, N.Ya., dots.; TARASOV, F.M., dots.;
BOUSHEV, T.A., dots.; SHUVALOV, V.N., dots.; VASIL'YEV, P.V.,
inzh.; KUZNETSOV, V.I., inzh., retsenzent; SURKOV, V.D.,
prof., retsenzent;

[Technological equipment of dairy industry enterprises] Tekhnologicheskoe oborudovanie predpriatii molochnoi promyshlennosti. [By] G.V. Krupin dr. Izd. 3., perer. Moskva, Izd-vo "Mashinostroenie," 1964. 355 p. (MIRA 17:8)

1. Kafedra tekhnologii moloka Moskovskogo tekhnologicheskogo instituta myasnoy i molochnoy promyshlennosti (for Surkov).

LUK'YANOV, P.

Activity of trade unions in rural areas is on the rise. Sov. profsoiuzy
6 no.12:12-16 S '58. (MIRA 11:9)

1. Sekretar' Voronezhskogo obkoma Kommunisticheskoy partii Sovetskogo
Soyuza.

(Voronezh Province--Agriculture) (Trade unions)

- [illegible]

KOKORIN, P.I., prof.; LUK'YANOV, P.F., prof.; PROSKURIN, V.V., dotsent

Problems of mining education; concerning higher education in
mining engineering. Ugol' 40 no.8:22-24 Ag '65.

(MIRA 18:8)

1. Kemerovskiy gornyy institut.

LUK'YANOV, P.F.

Technology--

(Use of rock from mining operations in backfill and in underground crushers). Kemerovo,
Izd. Kuzbass, 1951.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

LUK'YANOV, P. F.

LUK'YANOV, P. F.: "The working of thick, steeply inclined veins under protected installations in the Kuzbass using hydraulic equipment". Moscow, 1955. Min Coal Industry USSR. Academy of The Coal Industry. (Dissertations for the degree of Candidate of Technical Science.)

SO: Knizhnaya Letopis' No. 50 10 December 1955. Moscow.

LUK'YANOV, Pavel Fedorovich; BUTKEVICH, R.V., ~~otv.~~ red.; SMIRENSKIY,
M.M., red. izd-va; PRONINA, N.D., tekhn. red.; PROZOROVSKAYA,
V.L., tekhn. red.

[Improving systems of mining thick Kuznetsk Basin seams with
stope filling] Sovershenstvovanie sistem razrabotki moshch-
nykh plastov Kuzbassa s zakladkoi vyrabotannogo prostranstva.
Moskva, Gosgortekhzdat, 1962. 119 p. (MIRA 15:7)
(Kuznetsk Basin--Coal mines and mining)
(Mine filling)

LUK'YANOV, P.G.

"Dimensions in Hull Design and Their Resultant Effect." Cand
Tech Sci, Leningrad Shipbuilding Inst, Leningrad, 1954. (KL, No
7, Feb 55)

SO: Sum. No. 631, 26 Aug 55- Survey of Scientific and Technical
Dissertations Defended at USSR Higher Educational Institutions
(14)

GORYUNOV, Vasilii Aleksandrovich; ~~LUX'YANOV, P.G.~~, otvetstvennyy redaktor;
OSVENSKAYA, A.A., redaktor; GRUMKIN, P.S., tekhnicheskii redaktor

[Hull assembling operations] Korpusosbornochnye raboty. Leningrad,
Gos. soiuзное izd-vo sudostroit. promyshl., 1956. 186 p.
(Hulls (Naval architecture)) (MLRA 9:10)

DORMIDONTOV, Vladimir Konstantinovich; AREF'YEV, Timofey Vasil'yevich;
KISELEVA, Nina Arsen'yevna; KUZ'MENKO, Vladimir Kuz'mich;
LUK'YANOV, Petr Grigor'yevich[deceased]; NIKITIN, Yevgeniy
Ivanovich; TURUNOV, Savva Matveyevich; CHERVYAKOV, V.I., laureat
Leninskoy premii, inzh., retsenzent; MESHCHERYAKOV, V.V., inzh.,
retsenzent; KAZAROV, Yu.S., red.; CHISTYAKOVA, R.K., tekhn. red.

[Shipbuilding technology] Tekhnologiya sudostroeniia. Pod ob-
shchey red. V.K.Dormidontova. Leningrad, Sudpromgiz, 1962. 695 p.
(MIRA 16:1)

(Shipbuilding)

LUK'YANOV, P. I.

Agriculture

New progress in the transformation of nature; practices in effecting Stalin's plan for changing nature; (Khar'kev), Khar'kovshoe knizhno-gazetnoe izd-vo, 1950.

Monthly List of Russian Accessions, Library of Congress, May 1952. Unclassified.

LUK'YANOV, P. I.

"On the Problem of the Efficient Design of a Reactor for the Synthesis of Hydrocarbons From Carbon Monoxide and Hydrogen." Thesis for degree of Cand. Technical Sci. Sub 11 May 50, Moscow Inst. of Chemical Machine Building.

Summary 71, 4 Sep 52, Dissertations Presented in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

Luk'yanov, P.I.

AUTHOR: Luk'yanov, P.I.

65-7-14/14

TITLE: On the Work of the All-Union Conference on Heterogeneous Processes with a Fluidised Solid Phase (O rabote Vsesoyuznoy konferentsii po geterogennym protsessam s tverdoz fazoy v psevdoozhizhennom ("kipyashchem") sloye)

PERIODICAL: Khimiya i Tekhnologiya Topliva i Masel, 1957, No.7, pp.69-71 (USSR)

ABSTRACT: The conference took place during May 28 - June 4 in Gostekhnika. 50 papers were presented. The main programme of the conference was represented by 3 groups of papers: 1) Survey papers on mastering of the fluidised bed processes in processing of petroleum, roasting of ores of non-ferrous metals and chemical industries. 2) Papers on achievements in the field of development of the theory of chemical reactions, hydrodynamics, heat and mass-exchange in fluidised beds. 3) Papers on a number of technological processes with relatively detailed reports on individual stages of work and main operating indices. A member of Warsaw Polytechnical Institute, A.M. Sedletskiy, delivered a paper. It appeared from the paper that the fluidised bed technique found a wide application in catalytic cracking of raw distillates, roasting of zinc ores, pyrites, oxidation of naphthalene into phthalic anhydride and the gasification of

Card 1/5

65-7-14/14

On the Work of the All-Union Conference on Heterogeneous Processes
with a Fluidised Solid Phase

low-quality solid fuels. In respect of roasting zinc ores, the scale of application of the technique in the Soviet Union exceeds that in the USA. A large volume of experimental work is being carried out in the following fields: coking of petroleum residues, pyrolyses of petroleum raw materials to ethylene, catalytic cracking of heavy distillates and residual raw materials, separation of gaseous mixtures by the method of continuous adsorption, direct oxidation of ethylene into ethylene oxide, thermal treatment of raw mixes in the production of cement; preparation of charges for glass making, gasification of brown coals for water gas, combustion of fines of low reactive and brown coals; beneficiation of coals, roasting of molybdenum concentrates, antimony ores, copper-zinc concentrates, mercuric ore, sulphatising roasting of lead-zinc dusts; reduction of alunite rocks with subsequent production of alumina, sulphuric acid and potassium sulphate; drying of potassium sulphate, dehydration of karnollite, calcination of chalk into lime; preparation of aluminium fluoride by a dry method; calcination and cooling of alumina; technological operations in the production of lime, gypsum and many other materials.

Card2/5

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65-7-14/14

On the Work of the All-Union Conference on Heterogeneous Processes
with a Fluidised Solid Phase

Under development there are more than 20 contact catalytic processes for the petroleum industry and a similar number for the chemical industry. Results of an investigation of hydrodynamic and heat exchange in a fluidised bed were reported in 2 papers by O.M. Todes and his co-workers. Quantitative data in the above papers indicated that under optimum hydrodynamic conditions, the coefficient of heat transfer from the layer to wall reaches a maximum of an order of 500 - 1 000 kcal/hr/m². In the papers of D.I. Orochko and co-workers and B.K. Amerika, results of experimental-theoretical investigations and design work on counter-current step-wise equipment for catalytic cracking and other processes of the petroleum industry were reported. Experimental data on the process of adsorption in a fluidised bed, as well as treatment of these data by the method of similar transformation were reported by P.G. Romankov and co-workers. A number of important problems related to the application of the method of the fluidised bed in heterogeneous catalytic processes were discussed in the paper of M.G. Slin'ko. Basic problems of the theory of chemical reactions in a "fluidised bed" were

Card 3/5

65-7-14/14

On the Work of the All-Union Conference on Heterogeneous Processes
with a Fluidised Solid Phase

explained by K.P. Lavrovskiy and A.L. Rozental'. Many experimental data and results of theoretical investigations on hydrodynamics, heat and mass transfer in a fluidised bed were given in papers and short communications by I.G. Martyushkin, V.Ya. Kruglikov, V.V. Manshilin, N.Kh. Manakov, N.P. Vasilenko, I.M. Razumov, Ye.V. Smidovich and L.A. Vlasenkov. Two distinct views on the problem of treatment of physical representation of a fluidised layer appeared during the conference. Some authors (T.M. Todes and co-workers) consider that a fluidised layer can be conditionally treated as a single-phase system, while other authors (D. Orochko, I.G. Martyushin, P.I. Luk'yanov) pay more attention to gas bubbles passing through the layer and causing stirring of solid particles and thus consider it as a two-phase system. V.A. Aliyev and V.S. Kramskiy reported on the solution of problems which arose during the design and construction of the first Soviet catalytic cracking plant. Deficiencies of Soviet work in this field were pointed out during the discussion by Ye.M. Smidovich. Some critical remarks on the organisation of roasting of ores of non-ferrous metals were made by N.A. Pegaliyeva (Kazakhskiy Mining Institute). In decisions

Card 4/5

65-7-14/14

On the Work of the All-Union Conference on Heterogeneous Processes
with a Fluidised Solid Phase

of the conference, it was pointed out that the rate of erection of plants based on the fluidised bed technique does not correspond to the needs of the industry and an appeal was made for the intensification of theoretical and experimental work on the subject and organisation of serial production of some kinds of plants. The conference discussed the problem of unification of terminology used in work with fluidised fine-grained material.

AVAILABLE: Library of Congress
Card 5/5

LUK'YANOV, P.I.

LUK'YANOV, P.I.

Rapid process for the thermal cracking of hydrocarbons. Khim. i
tekh. topl. i masel no.9:53-56 S '57. (MLRA 10:11)
(Cracking process)

Luk'yanov, P.I.

65-12-5/9

AUTHORS: Luk'yanov, P.I., Gusev, I.V. and Nikitina, N.I.

TITLE: On the Movement of a Compact Layer of a Granular Material in an Apparatus (O dvizhenii kompaktnogo sloya zernistogo materiala v apparate)

PERIODICAL: Khimiya i Tekhnologiya Topliva i Masel, 1957, No.12, pp. 38-44 (USSR).

ABSTRACT: An experimental investigation of some special features of the movement of layers of granular materials in cylindrical and rectangular vessels was carried out. A dividing metallic tube, 230 mm in dia., 2 500 mm long, and a rectangular vessel, 232 mm wide, 1 500 mm long, a spherical and pelletised alumino-silicate catalyst, refractory heat transfer medium and activated carbon were used for the experiments. Experimental results are given in the form of velocity distribution curves. On the basis of the data obtained on the distribution of velocities in a cross-section of a moving column and the dependence of this distribution on mean particle size the problem of changes in the mean density of a compact layer of granular material is discussed. There are 3 tables, 4 figures and 7 references, 4 of which

Card1/1 are Slavic.

AVAILABLE: Library of Congress

AZROV, M.E.; LUK'YANOV, P.I.; BALUYEVA, G.A.

Laboratory reaction vessel with suspended catalyst bed. Zav. lab. 23
no.3:369-370 '57. (MIRA 10:6)

1. Nauchno-issledovatel'skiy institut sinteticheskikh spirtov i
organicheskikh produktov.
(Chemical laboratories--Equipment and supplies)

LUK'YANOV, P.I.; MOROZOVA, M.K., red.; SHEVCHENKO, G.A., tekhn.red.

[Production of ethylene by the pyrolysis of crude oil] Piroliz
neftianogo syr'ia na etilen. Moskva, Vses.in-t nauchn.i tekhn.
informatsii, 1958. 96 p. (MIRA 13:5)
(Ethylene) (Petroleum--Refining)

Luk'yanov, P. I.

AUTHOR: Luk'yanov, P. I.

65-1-2/14

TITLE: On Increasing the Resources of Ethylene for the Petroleum Industry. (Ob uvelichenii resursov etilena dlya neftekhimicheskikh proizvodstv).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.1.pp.4-8. (USSR).

ABSTRA CT: The development of the petroleum industry in the USSR and also abroad shows that the residualgases in the petroleum works are not always the cheapest material for the production of ethylene. Investigations carried out by Giprokauchuk show that the manufacture of synthetic alcohol and a number of other products obtained during organic synthesis would be more efficient if the manufacture of ethylene from gases with a high content of specific components was increased. These gases are obtained during the pyrolysis of gaseous and liquid saturated hydrocarbons, obtained during the primary processing of crude petroleum. Important investigations have been carried out in the USSR to find new processes to obtain low-molecular olefins by the pyrolysis of crude petroleum products. These investi-

Card 1/3

65-1-2/14

On Increasing the Resources of Ethylene for the Petroleum Industry.

gations were carried out by Giprokauchuk (which worked on the high temperature decomposition process of propane and liquid hydrocarbons), by M. A. Dalin (on the pyrolysis of ethane, ethane-propane-propylene mixtures and liquid hydrocarbons) and by NIISS - A. T. Menyaylo, T. N. Muchina (on the pyrolysis of butane). Laboratory investigations have shown that during the pyrolysis of propane at 825°C and a period of 0.11 seconds, a maximum yield (23.5%/weight) of high olefins, mainly propylene, is obtained. In this case the yield of ethylene is 35%-36%/weight and practically no carbon or acetylene are formed. This method is especially suitable when applied under normal conditions in tube reactors, especially when large quantities of propylene formed are used as raw material for the production of isopropyl alcohol. The total yield of ethylene and propylene reaches 59%/weight of the starting material. When the propylene is recirculated the yield of ethylene increases to 45%/weight; the total weight of low-molecular hydrocarbons is decreased to 13%/weight. Similar conditions prevail during the pyrolysis of butane. The yield of unsaturated derivatives, when the butane is recirculated, is 57%-59%/weight, out of which

Card 2/3

On Increasing the Resources of Ethylene for the Petroleum Industry. ^{65-1-2/14}

ethylene represents 30%/weight and propylene 29%. When applied to propylene, the total yield of ethylene is increased to 40%-41%/weight and the total yield of synthesized olefins is 17%. Butane can be used as a raw material for pyrolysis processes, especially when large quantities of ethylene and propylene are to be produced simultaneously. In the USSR the pyrolysis of light distillates is advantageous in those regions where crude oil or low grade petroleum products can be used as raw materials. Up to 34%/weight of unsaturated hydrocarbons C_2, C_3, C_4 can be obtained during the pyrolysis of a wide fraction, by the fractional distillation of crude oil. The most suitable way of using gasoline as raw material for the preparation of ethylene is the erection of pyrolysis and petroleum chemical plants near the sources of by-product gases. More widespread use has been made of this process since the discovery of new oilfields. There are 6 references 3 of which are Soviet, 2 English and 1 German.

AVAILABLE: Library of Congress.

Card 3/3

SOV/63-3-6-3/43

AUTHOR: Luk'yanov, P.I., Candidate of Technical Sciences

TITLE: Reactor Installations for the Pyrolysis of Ethylene From Petroleum Raw Material (Reaktornyye ustroystva dlya piroliza neftyanogo syr'ya na etilen)

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1958, Vol III, Nr 6, pp 703-715 (USSR)

ABSTRACT: Ethylene is needed for organic syntheses on a broad scale. It is produced from products of the oil industry ranging from ethane and propane to heavy oil and mazut. The pyrolysis of these raw materials is carried out in various types of reactors which are discussed here. Pipe reactors are widely used and their construction is very simple (Figure 1). They operate at a temperature of 820 - 830°C. It has been shown that nickel in the pipes increases the disintegration of the hydrocarbons, whereas chromium reduces it. The Soviet steel type EI-417, which is used for these pipes, contains 25% chromium and only 20% nickel, in the USA the alloy used in the manufacture of these pipes contains 77% nickel and only 15% chromium. The optimum of the pipe diameter is 100 - 110 mm. The coke formation in the reactors makes a cleaning necessary at intervals of 2 weeks to 6 months depending on the raw material and the operat-

Card 1/3

SOV/03-3-1-3/43

Reactor Installations for the Pyrolysis of Ethylene From Petroleum Raw Material

ing conditions. In other reactors the heat is supplied by a mobile compact layer of grains of 6 - 15 mm in diameter. This layer moves downward by gravity. The only industrial installation of this type has been designed by the firm "Phillips". It has a heat output of 7.5 million kcal/h (Figure 2). The temperature of the heat carrying granules was increased to 1,370°C. If the heat carrying layer is rarified and made of powdered substances, the raw material has to remain for only a short time in the reaction zone. This method of pyrolysis has been proposed in Reference 30. The heated powder-like oil coke moves in a parallel flow with the raw material (Figure 5). The falling layer of coke (Figure 7) has been replaced by a rising layer (Figure 6) which eliminated many difficulties. Reactors with a liquid heat carrying layer developed by the US firm "Monsanto Chemical Co", and with gaseous layers de-

Card 2/3

807/1 6-1/43
Reactor Installations for the Pyrolysis of Ethylene From Petroleum Raw
Material

signed by the firms "Kellogg" and "Eastman" (Figure 9) are also
mentioned.

There are 10 diagrams, 1 table, and 44 references, 19 of which
are Soviet, 23 English, and 2 German.

Card 3/3

AUTHOR: Luk'yanov, P. I. SOV/ 65-58-6-11/13
TITLE: ~~Efficient Construction of a Reactor for the Pyrolysis~~
of Crude Petroleum Products to Ethylene. (O ratsional'-
noy konstruksii reaktornogo ustroystva dlya piroliza
neftyanogo syr'ya na etilen).
PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.6.
pp. 58 - 65. (USSR).
ABSTRACT: Research carried out in this field in the USSR and in
the West from 1948 to date is reviewed. The investiga-
tion of highly industrial aggregates for the pyrolysis
of crude petroleum products has recently become very im-
portant, as in this way the resources of ethylene can be
increased considerably (Refs. 1 - 12). The advantages of
solid heat carriers over tubular reactors and conditions
for carrying out the pyrolysis in a reactor with a so-called
"falling layer" of a powdered heat carrier are discussed.
Formulae for calculating the heat equilibrium, the heat
exchange, a differential equation for the movement of
solid particles etc. are given which assist in defining
the relationship between the basic parameters of the pro-
cess. Results are compared with those obtained in a
fluidised bed reactor and the respective dimensions of the
reactors are given. It is pointed out that the construct-

Card 1/2

SOV/65-58-6-11/13

Efficient Construction of a Reactor for the Pyrolysis of Crude Petroleum Products to Ethylene.

ion of a fluidised bed reactor is more complicated than the construction of a "falling layer" reactor. Reference is made to the work of K. P. Lavrovskiy and A. M. Brodskiy (Ref.3). Certain disadvantages of this new reactor are discussed e.g. when the inlet temperature of the raw material into the reactor = 500°C and the average logarithmic difference in temperature = 100°C , the heat carrier will cool from 955°C to 600°C in a countercurrent reactor. Optimum temperatures for thermo-contact processing were found to be as follows: ethane - 1000°C , propane - 350°C and heavy residues - 700° - 750°C . The optimum contact time at the above temperatures were 0.012, 0.06 and 0.1 sec. respectively. When examining this data, it should not be overlooked that the degradation products of ethane do not contain acetylene. According to K. Schmidt (Ref.15) and H. I. Hepp et al. (Ref.16) the pyrolysis products of ethane (1000°C and at optimum contact times of 0.01 - 0.02 sec.) contain 1.5 - 5% acetylene. Data published by English authors (Refs.16 and 18) are critically examined. There are 23 References: 13 Soviet, 9 English and 1 German.

Card 2/2

ASSOCIATION: GNTK SSSR.

LUK'YANOV, P.I.; GUSEV, I.V.; NIKITINA, N.I.

Pressure of compact moving beds of granular material on the
walls of shaft-type apparatus. Khim. i tekhn. topl. i masel 4
no.1:63-68 Ja '59. (MIRA 12:1)
(Pressure)

LUK'YANOV, P.I.; GUSEV, I.V.; NIKITINA, N.I.

Limit rate of flow of granular materials. Khim.i tekhn.topl.i masel
5 no.10:45-49 0 '60. (MIRA 13:10)

(Granular materials)

LUK'YANOV, P.I.; GUSEV, I.V.; NIKITINA; N.I.

Effective utilization of the operating volume of apparatus with the
compact moving bed of granular material. Khim. i tekhn. topl. i masel
6 no.11:51-55 N '61. (MIRA 14:12)

(Catalysts)

LUK'YANOV, P.I.

High pressure apparatus with an airtight drive (review). Khim. i
tekhn. topl. i masel 6 no. 12:66-67 D '61. (MIRA 15:1)
(Clinical engineering--Equipment and supplies)

KLIMENKO, Aleksandr Petrovich; BYSTROVA, T.A., red.; LUK'YANOV, P.I.,
red.; YEFREMOVA, T.D., ved. red.; BASHMAKOV, G.M., tekhn. red.

[Production of ethylene from petroleum and gases] Poluchenie etile-
na iz nefi i gaza. Moskva, Gostoptekhizdat, 1962. 234 p.
(MIRA 15:7)

(Ethylene) (Petroleum--Refining)

PHASE I BOOK EXPLOITATION

SOV/6239

Luk'yanov, Pavel Izotovich and Aleksandr Georgiyevich Basistov

Piroliz neftyanogo syr'ya; resursy neftekhimii (Pyrolysis of Crude Oil; Resources of Petroleum Chemistry). Moscow, Gostoptekhizdat, 1962. 273 p. 2700 copies printed.

Scientific Ed.: S. I. Babushkina; Tech Ed.: Z. I. Yakovleva.

PURPOSE: This book is intended for technical personnel of petroleum-refining and petrochemical plants, design and planning organizations, and scientific research institutes of the petroleum-refining and chemical industries.

COVERAGE: The book deals with scientific principles underlying the pyrolysis of crude petroleum and gas under laboratory and industrial conditions and discusses the technical characteristics of these processes and unique features of reactor equipment. Optimum thermo-electric and kinetic parameters for producing end products, and types of raw materials, depending upon production conditions, are reviewed

Card 1/3

Pyrolysis of Crude Oil (Cont.)

SOV/6239

with respect to the best configuration of equipment and the most effective means of pyrolysis. (A comprehensive review of Soviet and non-Soviet pyrolysis equipment and methods is given in Ch. IV, including pyrolysis by means of molten metal, plasma jet, gamma radiation, etc.). There are 239 references: 150 Soviet, 82 English, and 7 German.

TABLE OF CONTENTS [Abridged]:

Foreword	
Ch. I. Raw Material and Pyrolysis Products	3
Ch. II. General Problems of the Theory of Hydrocarbon Pyrolysis Processes	5
Ch. III. Composition and Yield of Hydrocarbon Pyrolysis Products	16
Ch. IV. Methods of Pyrolysis and Reactors	71
Card 2/3	124

Pyrolysis of Crude Oil (Cont.)

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SUBJECT: Oil and Gas Industries

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FADEYEV, I.G.; YEGOROV, N.N.; LUKIYANOV, P.I.

Friction factor for granular materials. Khim. i tekhn. topl. i
masel 9 no.4:10-13 Ap '64. (MIRA 17:8)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy
institut neftyanogo mashinostroyeniya i Moskovskiy institut
khimicheskogo mashinostroyeniya.

LUK'YANOV, P.M.

First Russian aluminum plant. Izv. vys. ucheb. zav.; tsvet.
met. 5 no.6:145-149 '62. (MIRA 16:6)

1. Institut istorii yestestvoznaniya i tekhniki AN SSSR.
(Russia--Aluminum plants)

LUK'YANOV, P.M.; LEZHNEVA, O.A.

Celebration in Kiev, Leningrad, and Arkhangel'sk of the 250th anniversary of the birth of M.V. Lomonosov. Vop. ist. est. i tekhn. no.13:181-182 '62. (MIRA 16:5)

(Lomonosov, Mikhail Vasil'evich, 1711-1765)

Contact oxidation of sulfur dioxide to sulfur trioxide under pressure. I. P. M. Luk'yanov, I. N. Bushmakin, M. V. Ruisakov and I. R. Molkenitis. *J. Applied Chem.* (U. S. S. R.), 6, 772-84 (1933).—SO₂ was oxidized to SO₃ in the presence of burned pyrite (contg. H₂O 15.08, Fe 56.16, S 3.08 and Cu 0.03%) of grain size 3-5 mm. The best temp. is about 650°; fluctuations in the concn. of SO₂ in the original gas contg. 6-8% of the former have no effect on the SO₃ yield. An increase of the air concn. in the original gas from 10% to 19-20% does not change the SO₃ yield. An increase in the pressure at a const. discharge rate of the gas increases the SO₃ yield. At a temp. of 650° and a velocity of 800 l. gas/(l. catalyst x hrs.) an increase of the pressure from 25 to 100 atm. raises the yield from 76 to 95% of SO₃. With increase of velocity of passage of gas through the catalyst at a const. pressure the yield decreases, e. g., at a pressure of 100 atm., a temp. of 650° and a volume velocity of 23.0, the yield is 95%, while at a volume velocity of 03 the yield is only 70%. The catalyst can be used for a very long period, but it is very sensitive to changes in the operating conditions and is fatigued after a comparatively short time. The main causes for the lowering of the catalyst's activity are (1) the presence of moisture in the gas blown through the catalyst, which should not be higher than the moisture left in the gas when passed through a washing bottle with concd. H₂SO₄, (2) the presence in the gas of more than 10% SO₂, and (3) a temporary lowering of the temp. during the operation of the catalyst. The catalyst is fatigued after 4 hrs., but the lost activity can be completely restored by blowing for 3-5 hrs. with dry air heated to 650°. The app. used is described and data are tabulated and plotted. A. A. Bochtinsk.

A. A. Boettling

Technical reconstruction of the sulfuric acid and sulfur industry in the second five-year plan. V. V. Dobrovolskiy and P. M. Luk'yanov. *Trudov Perov Vsesoyuznoi Konferentsii po Sulfurnoi Kislote i sere, Sotrudnichestvo Gosplanov NKTP, U. S. S. R. Leningrad, 1934, 204 pp.* I. The sulfuric acid industry at the threshold of the 2nd five-year plan. V. V. Dobrovolskiy. *Ibid.* 4-14.—At the end of the first 5-year plan in 1932, the amt. of H_2SO_4 produced in U. S. S. R. was 495,000 tons and production capacity was 810,000 tons as compared with 160,000 tons produced in 1913. It is planned that by 1937 the production should reach 2.4 million tons of H_2SO_4 . The problems of raw materials, methods of production, new construction and reconstruction of plants, of plant location with regard to economic and technical factors and of scientific research, are discussed. II. Methods of intensifying and further developing of processes based on nitro-gen oxides. K. M. Malm. *Ibid.* 14-45; cf. C. A. 28, 14739.—A detailed discussion of the theories involved in the production of H_2SO_4 by the oxidation of SO_2 with NO_x . Conclusions: The limits of efficiency in this process have not been reached and in the newly projected plants a greater efficiency and a larger output of acid per unit vol. of absorption tower will be effected. The optimum mixt. contains 20% SO_2 and 17% O_2 . III. Tower process of producing sulfuric acid. V. N. Shul'ts. *Ibid.* 46-55; cf. C. A. 28, 2633, 2851 and 4543. IV. Stupai-kov's three-tower system. S. D. Stupaiikov. *Ibid.* 56-60; cf. C. A. 29, 8243. V. Friedel's method of producing sulfuric acid under pressure. M. V. Egorova. *Ibid.* 60-64.—When operating at a pressure of 12-13 atm., the SO_2 dissolves more readily in the NO_xSO_2H than at ordinary pressure, and the capacity of the plant is thus increased. VI. Production of oleum and oil of vitriol by the combina-tion method of N. F. Yushkevich. A. N. Uedilov. *Ibid.*

65-9.—This method is a combination of tower and contact processes. Part of the H_2SO_4 is produced in the form of burning acid through the stages of producing SO_2 by the contact process using an Fe-oxide catalyst, and then ab-sorbing the SO_2 in the monohydrate acid. Part is produced as the monohydrate (98.5% H_2SO_4) by the tower process. Provision is made for utilizing the heat of combustion of ground pyrites in a specially designed app. A plant pro-duced 120,000 tons of H_2SO_4 per year is planned. VII. Contact-tower system. S. D. Shein. *Ibid.* 69-71.—A discussion of economics of the contact-tower combina-tion system of Yushkevich. VIII. Performance of Yushkevich's pyrite-burning furnaces. M. N. Vitov. *Ibid.* 72-81.—Y.'s furnace is designed to burn dry, powdered pyrites with dry air. The advantages and dis-advantages of the furnace are described. IX. Various methods of producing sulfuric acid by the contact process. P. M. Luk'yanov. *Ibid.* 81-8.—A review of practices in U. S. A. and U. S. S. R. X. Application of high concen-tration of SO_2 in the contact sulfuric acid process. I. N. Kuzminikh. *Ibid.* 89-99.—A discussion, with calcu-lations, of the contact process. XI. Physicochemical calculations of the contact process apparatus. G. K. Boreshkov. *Ibid.* 99-105.—Kinetics of the process are discussed. Equations are given, show-ing relation between time of contact and compn. of gas mixt., on one hand, and productivity of the contact ap-paratus, on the other. XII. A comparison between vanadium and platinum catalysts for the production of sulfuric acid. G. K. Boreshkov. *Ibid.* 106-13; cf. C. A. 29, 6371.—In working with a V catalyst, the problem of